

ROSEATE AND SOOTY TERNS *STERNA DOUGALLII* AND *FUSCATA* BREEDING
ON ISLETS IN SOUTHERN SOMALIA

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Roseate Terns *Sterna dougallii* attempted to breed on two islets just offshore a few kilometres south of Mogadishu, southern Somalia, in 1979. Their failure was due to repeated egg-removal by the local people. Because hundreds of several other species of terns, including Noddy *Anous stolidus*, Lesser Noddy *A. tenuirostris*, Lesser Crested Tern *S. bengalensis*, Crested Tern *S. bergii*, Bridled Tern *S. anaethetus* and Sooty Tern *S. fuscata*, joined the colony, plans were made by the Wild Life Department to protect the islands if the birds returned in 1980, particularly to see if any of these other species would also breed.

Immense numbers of terns occur in coastal areas near Mogadishu, and large numbers in other parts of the country, but there are surprisingly few breeding records from anywhere in Somalia. Of the 17 *Sterna* and *Anous* species recorded in Somalia, eight are known to have bred: Archer & Godman (1937) refer to White-cheeked Terns *S. repressa* and Bridled Terns breeding on Aibat Is. (11° 31'N, 43°27'E) and Saad al Din Is. (11°27'N, 43°28'E) off Zeila in the Gulf of Aden, Lesser Crested Terns on Aibat and Crested Terns on Aibat and Komaleh Is. (11°28'N, 43°22'E); Heuglin (1869-74) and North (1946) discuss Sooty Terns and Noddies breeding on Mait Is. (11°16'N, 47°15'E), also in the Gulf of Aden; North (1944) records Little Terns *S. albifrons* breeding near Brava (1°06'N, 44°03'E) and also Roseate Terns attempting to breed on an islet only 60 yards (55 m) in diameter, named Chilani, at the same place. One of us (JSA) has found Little Terns breeding in 1978-1980 all along the coast from 105 km north-east of Mogadishu to 37 km southwest, and also at Brava. He also saw c. 100 pairs of White-cheeked Terns with eggs on 22 September 1979 on a small islet at 37 km north of Ras Kiamboni (1°39'S, 41°37'E), where there were also 20 Roseate Terns present; on the following day there were many White-cheeked Terns, probably breeding, on one islet at 20 km northeast of Ras Kiamboni, and c. 50 Roseate Terns on another islet at 5 km northeast. On the first of these islets there were also many small dark feathers suggesting that Sooty Terns or Noddies may also breed in the Baijun archipelago. There were also many Sooty Terns over Chimoni Is. (0°21'S, 42°31'E) off Kismayu on 6 October 1978, and over an island off Ras Kiamboni on 19 September 1979, but these could only be viewed from the mainland. It is very probable that terns breed or attempt to breed on many islands off the Somalia coast, particularly in the Baijun, but these still await investigation.

THE MOGADISHU ISLETS

There are four small islets south of Mogadishu, all of which can be reached by wading at low tide. At their highest points they are only 4.5 - 7.0 m above low water mark.

- a) '1st Mosque Is.' at Gezira (1°56'N, 45°11'E), 23 km southwest of Mogadishu. This island has a small mosque, and is not used by terns.
- b) 'North Is.' (1°55'N, 45°05'E), 32 km southwest of Mogadishu, 78 m × 23 m, and 170 m offshore. About half the island is bare sea-eroded coral rock, the other half having a sparse covering of coarse grass *Sporobolus virginicus*.
- c) '2nd Mosque Is.' lies only 13 m south of North Is., 171 m × 41 m, and has a small mosque at its highest point. Much of this island is covered with a low *Suaeda*, mostly less than 1.4 m high, but there are also areas of coarse grass

and bare rock.

d) Buntapsi Is. (1°58'N, 45°04'E), 35 km southwest of Mogadishu, 55 m × 25 m, and 180 m offshore, and is mainly (95 per cent) covered with *Sporobolus*.

HISTORY OF ATTEMPTED BREEDING IN 1979

- 22 June: Buntapsi Is.: many Roseate Terns seen from mainland, and thought to be breeding.
 26 June: Buntapsi Is.: hundreds of eggs said to have been taken by local people today.
 29 June: Buntapsi Is.: c. 600 Roseate Terns present; three local boys removed 100 eggs.
 30 June: 2nd Mosque Is.: local people reported hundreds of terns breeding.
 13 July: 2nd Mosque Is.: c. 600 Roseate Terns, apparently breeding, seen from mainland. No terns present at Buntapsi Is.
 25 August: Buntapsi Is.: 300+ Roseate Terns present, probably breeding.

During these observations the other species of terns present included a few Lesser Crested and Crested Terns on Buntapsi, where there were four Sooty Terns on 26 June. There were usually up to five Bridled Terns on Buntapsi in June and August, and on 2nd Mosque Is., in July. There were over 100 Lesser Noddies on Buntapsi Is. on the first visit on 22 June, increasing to 400 on 29 June, and 400 again on 2nd Mosque Is. on 10 July, when the Roseate Terns returned to breed there; they then returned to Buntapsi Is. with the Roseate Terns, for there were 120 there on 25 August (Ash 1980). Noddies arrived on the scene later, when there were over 300 on Buntapsi Is. on 24 August.

HISTORY OF BREEDING IN 1980

Roseate Terns began to return to the Mogadishu area in numbers in mid April.

- 30 May: at Buntapsi Is. there were over 200 adults displaying on the mainland beach opposite the island, and 400-500 roosted on North Is. that evening.
 6 June: no terns on Buntapsi Is. but c. 1000 Roseate Terns on North Is., of which some probably had nests.
 7 June: 1642 Roseate Terns were counted flying south past a headland near 1st Mosque Is.
 8 June: c. 1000 Roseate Terns on North Is. A camp for two guards was established on the mainland opposite the island.
 13 June: c. 1000 Roseate Terns had now moved on to 2nd Mosque Is., where they had just begun to lay. A Brown-necked Raven *Corvus ruficollis* made three crossings to the island and removed an egg each time, but only after considerable time spent in searching.
 16 June: all the birds left 2nd Mosque Is. at 07:00 and moved to Buntapsi Is., where there were also four Sooty Terns.
 27 June: Buntapsi Is.: many nests with 1 egg only. Local people claimed to be removing eggs (guards still at 2nd Mosque Is.); nine Sooty Terns present, confined to small area in centre of colony.
 4 July: Buntapsi Is.: c. 800 Roseate Terns - many on nests all over island. Seven Sooty Terns present, of which one appeared to be incubating.
 11 July: Buntapsi Is.: c. 2000 Roseate Terns, and at least 500 nests, all with C/1 or C/2, except one with C/3. Fourteen Sooty Tern nests each with C/1.
 17 July: Buntapsi Is.: the northern half of the island completely deserted. Eleven Sooty Terns counted.
 25 July: Buntapsi Is.: Roseate Terns just hatching, but most still with eggs. Eggs present in the deserted part of the colony. Seventeen Sooty Terns there.
 1 August: Buntapsi Is.: probably over half the Roseate Terns had hatched, but

- there were more dead than live chicks in all stages from newly hatched to well feathered (so some presumably hatched before 25 July). At least 12 Sooty Terns present, with one hatched egg and others with C/1.
- 10 August: North Is.: the guards reported that large numbers of Roseate Terns with some Sooty Terns returned to this island today.
- 12 August: Buntapsi Is.: the young Roseate Terns were now at the flapping stage (one had reached the mainland beach where it was very agile); only 20 young could be seen on the island through a telescope, and it was considered that not more than 50 had survived. The whole island was littered with dead young in all stages of development, and the hundreds of nests in the deserted half of the colony mainly contained C/2. There were 11 adult Sooty Terns on the island and the single pullus was ringed, but 19 other single egg clutches were deserted and contained dead embryos at various stages from mid incubation to chipping. At this date it was considered that heavy sea-spray at night was a possible cause for the desertion of eggs by both species, and possibly also for the dead young.
- 12 August: North Is.: c. 1500 Roseate Terns and at least 20 Sooty Terns.
- 14 August: North Is.: terns present but not incubating.
- 19 August: Buntapsi Is.: c. 100 Roseate Terns present, but not breeding. Recommended that guards return to North Is. site.
- 9 September: North Is.: several hundred Roseate Terns and about ten Sooty Terns, but only a few of the former attending nests. Most of the birds had now transferred to 2nd Mosque Is., where they were apparently not breeding.
- 10 September: Gezira: two juvenile Roseate Terns seen, presumably of local origin.
- 12 September: North Is.: c. 20 Roseate Terns' nests, only one with C/3, but most chipping or with small chicks near nests. According to local people they had been removing eggs daily from this island in spite of the presence of guards. No Sooty Terns here or on 2nd Mosque Is.
- 12 September: Buntapsi Is.: over 1000 adult Roseate Terns and at least three juveniles (presumably locally bred). Nine adult Sooty Terns and the ringed juvenile almost flying.
- 28 November: no terns on any islands.

During the 1980 breeding season small numbers of both Lesser Crested and Crested Terns visited the colonies, of particular interest in June being several, up to ten in a day, *S. bergii thalassina*, the southern race of the Crested Tern, not previously recorded in Somalia. A few Bridled Terns usually present but never more than six, at all the colonies. This year noddies were present throughout the breeding season, reaching a peak of about 50 on 13 June, but the Lesser Noddy, although present throughout the period, was in much smaller numbers than in 1979, reaching a peak of 100 ± 5 on 4 July.

BILL COLOURATION OF ROSEATE TERNS

North (1944) noted that in June the bills of Roseate Terns at Brava were all-black, but in August they were red with dark tips (apical 1.5mm brown, remainder bright red, in one bird collected on 12 August). Warman (1979) described the change in bill colour of adult Roseate Terns *S. dougallii arideensis* through the breeding season on Aride Is., Seychelles. This race demonstrates a change in colour from an all-black bill prior to breeding to an all-red bill at the end of the cycle, the red colouration first appearing at the base. The Somalia birds show similar stages of development, although the apical one-third always remains black in this, the nominate race. In May and June practically all the adult Roseate Terns had all-black bills, although from about the middle of June an increasing number were showing traces of red at the base of the bills. On 4 July about half of c. 800 Roseate Terns checked

at the colony had bills which were about half and half red and black, and by 29 July practically all had red bills with only the tip black. No Roseate Terns were seen with all-red bills. An anomalous bird on 24 April had a black-tipped red bill like the July birds, but this is an exceptional condition at this time of the year in this area.

BREEDING SEASONS IN INDIAN OCEAN

The breeding season on Aride Is. is given as 22 April - 18 August by Warman (1979) for the race *arideensis* of the Roseate Tern. In Kenya nominate birds breed late July to early September (Britton 1980), whereas the same race in Somalia starts to breed between these periods, from 30 May - early October (although the picture is distorted here owing to disturbance at the colonies). However, the timing of events in the Somalia colonies follows closely that on Aride, but c. 30 days later, as can be seen in Table 1.

TABLE 1

Breeding and bill colour stages in Roseate Terns Sterna dougallii in Somalia and Seychelles

Stage of breeding and bill colour	Aride (Seychelles)	Somalia	Difference (in days)
Colonies occupied	7 May	6 June	30
First few eggs	12 May	13 June	32
Trace of red at bill base	12 May	13 June	32
Most with proximal $\frac{1}{2}$ of bills red	6 June	4 July	28
First eggs hatched	c. 17 June	c. 18 July	31
First flying young	14 July	12 August	29

BREEDING FAILURES

Dr W.R.P. Bourne (*in litt.*, 26 July 1980) has pointed out that Atlantic populations of Roseate Terns have been suffering from inexplicable breeding failures, so that their numbers are now at a very low level. It is tempting to suggest that breeding failures in Somalia may be attributable to the same cause or causes, whatever they may be, but in both 1979 and 1980 failures were almost certainly caused by two factors: egg removal by man, and drenching by spray from high seas. In 1979, desertion in June and August at Buntapsi Is., and in July at 2nd Mosque Is. could be attributed to egg-removal, which was known to be occurring. In 1980, the Roseate Terns moved in June from North Is., where they were probably breeding, to the adjoining 2nd Mosque Is., where they certainly laid eggs. They then moved again after a few days, to lay again on Buntapsi Is. at the end of June, where they suffered from egg-removal by man. Later they received protection here from egg-removal, but apparently suffered heavy loss of eggs and young from drenching spray (possibly at night). It may have been these unsuccessful birds which then returned to North Is. in August, where they again lost eggs, apparently to man, and most moved to 2nd Mosque Is., but apparently did not breed. Owing to lack of observers we have no records after 12 September.

Warman (1979) referred to two species of *Mabuaya* skinks being egg-predators on Aride, and mentioned the possible effects of the ticks *Amblyomma loculosum* and their associated arbovirus on young birds. At the Somalia colonies, a skink lives commonly just above the waterline on all the colony islets, but is too small to break a tern's egg and there was no suspicion that they might

be doing so. All the colonies were searched in the usual sites for resting ticks but none was found.

Brown-necked Ravens are very common on the mainland opposite the colonies, but on only one day was a single bird seen, which removed an egg each time on three sorties to the island and flew back to the mainland each time to eat them. Often ravens flew along the shore close to Buntapsi Is., but made no attempt to cross the narrow strip of water.

The restless behaviour of these terns may have been due to disturbance by sea and man, or possibly it may be a characteristic of new colonizers.

CONSERVATION

Unfortunately there is no clear evidence as to the exact cause of the relatively poor breeding success, although egg-removal by local people was clearly an important contributory cause, which could be controlled. If egg desertion and chick mortality are caused by breaking waves, then it is pointless to attempt to conserve these colonies, but another season with close observation by a trained observer is required to prove this point.

Roseate Terns are vulnerable birds, and their decrease in the Atlantic gives cause for concern. In the Indian Ocean, the situation is clearly much better, and with improved conservation, such as on Aride, the position may be better now than it has been for a long time. Nevertheless, a conservation effort is worthwhile in Somalia, where it is a relatively simple operation, for a large colony of sea-birds close to the capital city is of educational, touristic and scientific interest. The following recommendations are made if it is decided to give full protection to the birds if they return in 1981:

1. Guards should be placed near the colonies as soon as the birds arrive. They require reasonable living accommodation and protection from the heat and strong winds, and adequate food and water.
2. One person with biological training should visit the site(s) at least one day per week and preferably be present all the time.
3. The guards need to be educated in the reasons for protecting the birds.
4. The local people need to be instructed in the purpose of conservation, and consideration might be given to them being permitted to harvest the first crop of eggs.
5. The co-operation of local sheikhs might be sought to provide a religious reason for protecting the birds.
6. Nobody except the biologist should ever visit an islet after it has been colonized.

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At the close of the 5th Pan African Ornithological Congress held at Lilongwe it was unanimously decided to set up a Leslie Brown Trust Fund for ornithological research in Africa.

But for his untimely death, Leslie would have been one of the Vice-Chairmen at Lilongwe, and, as such, it is hoped that a fund of this nature will stimulate and encourage others to emulate Leslie's ideals and aspirations in the field of ornithological research.

A sizeable amount has already been raised, but before such a fund can become operational, many more contributions are needed. All contributions, no matter how small, or in what currency, are welcomed and will, of course, be acknowledged.

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